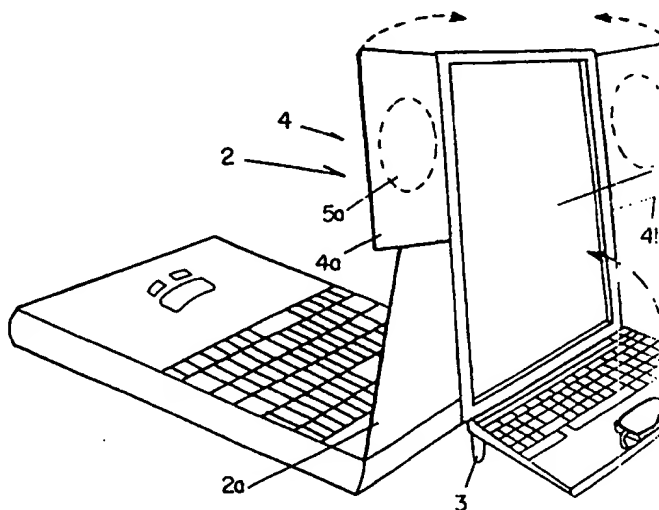




## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>6</sup> :</b> <b>G09G 3/36</b>	<b>A1</b>	<b>(11) International Publication Number:</b> <b>WO 99/31649</b> <b>(43) International Publication Date:</b> 24 June 1999 (24.06.99)
<b>(21) International Application Number:</b> PCT/BR98/00102 <b>(22) International Filing Date:</b> 16 December 1998 (16.12.98) <b>(30) Priority Data:</b> MU 7703079-6 17 December 1997 (17.12.97) BR <b>(71)(72) Applicant and Inventor:</b> COMOLATTI, Athos [BR/BR]; Apartamento 81, Alameda Ministro Rocha Azevedo, 726, CEP-01.410-000 São Paulo, SP (BR). <b>(74) Agent:</b> VILAGE ASSESSORIA E COMÉRCIO LTDA.; Rua São Carlos, 170, Jardim Europa, CEP-15.014-480 São José do Rio Preto, SP (BR).		<b>(81) Designated States:</b> DE, JP, US.  <b>Published</b> <i>With international search report.          Before the expiration of the time limit for amending the          claims and to be republished in the event of the receipt of          amendments.</i>

**(54) Title:** PORTABLE MICROCOMPUTER HAVING TWO FLAT SCREENS**(57) Abstract**

A portable microcomputer (1) having a first flat screen (2a) and a second flat screen, fixed or detached screen (2b). Second flat screen (2b) is hinged at the back portion of the first screen (2a). Second screen (2b) has lower end points supporting feet (3) which may be retracted into channels in the interior or side portion thereof. In the front portion of the second screen (2b) it is provided a hinged protective cover (4) comprised of first half (4a) and second half (2b), which can act as receptors for stereo speakers (5). The lower end of the second screen (2b) is capable of including a thin keyboard (6) which is hinged to an angle approximately perpendicular to screen (2b).

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**PORTABLE MICROCOMPUTER HAVING TWO FLAT SCREENS**

The present disclosure relates to a utility model patent application directed to a novel portable microcomputer having two flat screens, in particular to a portable microcomputer having a flat screen facing the microcomputer's operator and another flat screen coupled to said first one but facing the opposite direction in order to be seen by one or more different persons.

Until today, all portable microcomputers having flat screen manufactured by the modern industry show a single flat screen for viewing facing the microcomputer's operator.

Normally, the professionals needing to perform external presentations via microcomputer for an audience or a small audience such as vendors, sales representatives, trainers, private teachers, demonstrators and other find serious drawbacks to perform them with the single flat screen portable microcomputers of the state of the art, namely:

a) those people watching the presentation are seated side by side or behind the presenter looking at the flat screen of the portable microcomputer being operated by the presenter who is seating right in front of the screen.

The drawbacks are:

- The presenter takes a wide viewing angle of the screen which forces the audience to make efforts to laterally observe the screen;
- as a function of his position, it is difficult

for the presenter to make a direct visual contact with the audience thus impairing the feedback about the interest in the presentation.

b) Those people attending the demonstration are  
5 seating in front of the flat screen portable microcomputer while the presenter laterally actuates the keyboard of the portable microcomputer.

The drawbacks are:

- it is difficult for the presenter to laterally  
10 actuate the keyboard and look at the screen properly;

- the presenter may annoy the audience when typing on the keyboard while laterally operating the flat screen portable microcomputer;

- as a function of his position, it is difficult  
15 for the presenter to make a direct visual contact with the audience thus impairing the feedback about the interest in the presentation.

We can define the other means presently known and used by users as determining two different situations:

20 a) a video monitor is used connected to the portable microcomputer. It is required to carry or find available a separate video monitor further to making the electric connections to the portable microcomputer;

b) an electronic data projector is used. It is  
25 required to carry or be available in the site this expensive (it costs about 2 to 4 times the value of a flat screen portable microcomputer) and heavy (it weighs 2 to 4

times the weight of a flat screen portable microcomputer). Also, it is required to be available a proper site having reasonable size, controlled illumination and privacy. A special projection screen is required or, in an emergency,  
5 a flat and clear wall.

The economy in manufacturing a microcomputer having two flat screens is significant, since in practice only the folding module with the required power and data connections having said second flat screen with protective cover, which  
10 may have built-in speakers and optionally a second keyboard, is added to the traditional flat screen portable computer. That is, for the new double-screen portable microcomputer to operate only one of each traditionally employed electronic components and modules duly sized may  
15 be used, such as: battery, microprocessor, mass and system memories, operational system software and applications, additional memories removable or not, power supply, video board, sound board, microphone, modem, PCMCIA card, electric, electronic and data connections and interfaces.

20 Therefore, the provision of a double screen portable microcomputer makes it clear the advantages thereof in relation to the existing ways cited above.

In summary, as will be seen below the double screen portable microcomputer can be used as an individual  
25 traditional portable microcomputer, when the second screen thereof is closed, but when necessary it becomes instantaneously a practical, economic, efficient and light

apparatus directed to commercial presentations, private educational demonstrations or activities, or individual or collective training. Further to these professional applications, the double flat screen portable microcomputer  
5 may serve as an exciting electronic apparatus for playing interactive or competing video games with players face to face.

Optionally, in addition to a second screen the model may have a second keyboard having built-in  
10 mouse/touchpad/pointing stick to be used for example by a person subject to training in data processing.

Next, the model is explained in full details and for a better understanding reference is made to the attached drawings in which the representation is as follows:

15 Fig. 1 is a perspective view of the model closed in a position to be carried.

Fig. 2 is a side view of the model with the first screen open for individual use by the operator and with the second presentation screen closed.

20 Fig. 3 is a side view of the model with the first screen open, the second screen closed and the supporting feet stretched.

Fig. 4 is a side view of the model fully open ready for presentation with the second screen open, the supporting  
25 feet stretched and the protective covers equipped with stereo speakers open.

Fig. 5 is a perspective view of the model in the open

position without the optional keyboard ready for presentation.

Fig. 6 is a perspective view of the model with the covers open and the optional keyboard closed in an intermediate phase to the positioning for use.

Fig. 7 is a perspective view of the model fully open ready for presentation with the pair of speakers open and with the second optional keyboard open.

The portable microcomputer having two flat screens object of present application basically consists of a portable microcomputer (1) having two screens (2), that is, a first original one (2a), and a second one (2b) hinged to the back portion of the first one facing the opposite direction to be seen by one or more different persons.

Said second screen (2b) may have in lower end points supporting feet (3) which can be retracted into channels in the side portion or interior thereof and, when in use position, stretched to perform the supporting function and to maintain the correct view angle of said second screen (2b).

In the front portion of said second flat screen (2b) a hinged protective cover (4) is provided comprised of two halves which can act as receptors for stereo speakers (5a and 5b) and as closure for said flat screen (2b) when out of use.

Optionally, in the lower end of said second screen (2b) the model has a thin keyboard (6) capable of being hinged

when open to a plane almost perpendicular to said screen (2b) and when closed and out of use serving as a protective hinged cover to said second screen (2b) together with the hinged pair of stereo speakers (5a and 5b).

5        Thus, it should be emphasized that normally both screens (2a/2b) of the apparatus show simultaneously the same image, however by actuation of a specific key, command via keyboard, command via mouse/touchpad/pointing stick, voice command or another type of input made by the operator  
10        of the apparatus, said second screen (2b) may become "frozen" in the last image shown before actuation of said command cited above, or alternatively it may show for example a multimedia animation with the logo of the product shown while the operator of the portable microcomputer  
15        having two screens gets access to the data of no interest to the observer(s) of the second screen.

As mentioned, said hinged protective cover (4) of second screen (2b) is comprised of two retractable halves which in addition may serve as supports/sound diffusers for  
20        the stereo speakers of the multimedia system of the double screen portable microcomputer and optionally have a second keyboard (6).

Optionally, the module of the second screen (2b) coupled to the protective cover (4a and 4b) thereof with  
25        speakers (5a and 5b) and keyboard (6) may be made such that said module (2b) may be detachable and capable of being reattached in upper portion of screen (2a) of the operator



of portable microcomputer (1) with the required electric and electronic connections for transmission of data and energy between the interconnected modules. This way, this portable microcomputer having two flat screens may be temporarily carried and used as a normal single screen portable microcomputer and when necessary becoming the portable microcomputer having two screens with the connection of both modules (2a and 2b).

Another optional characteristic relates to the second screen having two options: one of them with a second optional keyboard (6) and the other as a flat screen of the touch screen type, which permits the audience to indicate specific data shown in said second screen (2b) by means of a simple touch in the word or option desired, just with the contact on said second screen (2b) with one of the fingers of the hand. In this case, the word pointed out in said second screen (2b) by the finger of whom is watching the presentation is instantaneously pointed out in the main screen (2a) so that the presenter takes notice of the same. As previously cited, the present model is recommended to the market of professionals needing to effect external presentations via microcomputer to a person or an audience, such as vendors, sales representatives, trainers, private teachers, demonstrators and other as well as play competition or interactive electronic video games face to face.

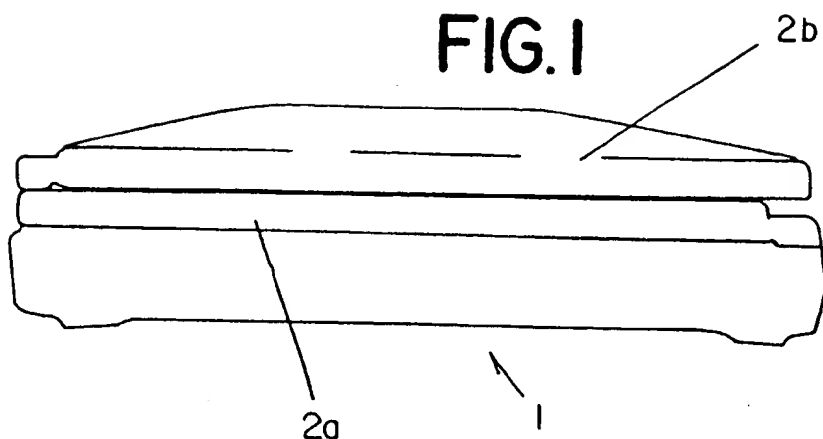
**CLAIM**

1. Portable microcomputer having two flat screens, characterized by a portable microcomputer (1) with two screens (2), that is, a first original one (2a) and a  
5 second fixed or detachable one (2b) hinged at the back portion of the first one facing the opposite direction in order to be seen by one or more different persons; said second screen (2b) may be provided with feet (3) in lower end points for supporting and suitable maintenance of the  
10 view angle, which may be retracted into channels in the interior or side portion thereof, and when in the use position stretched to perform the supporting function of said second screen; in the front portion of said second screen (2b) it is provided a hinged protective cover (4a  
15 and 4b) comprised of two halves which can act as receptors for stereo speakers (5a and 5b) and as closure for the flat screen when out of use; optionally in the lower end of said second screen (2b) the model has a thin keyboard (6) capable of being hinged to an angle approximately  
20 perpendicular to said screen (2b) and serving as a protection for said second flat screen (2b) when closed and out of use; optionally said second screen has two options: one of them with said second optional keyboard (6) or a flat screen of the touch screen type which allows the  
25 audience to indicate specific information shown on said second screen (2b) by means of just a touch in the desired word or option only with a touch on said second screen (2b)

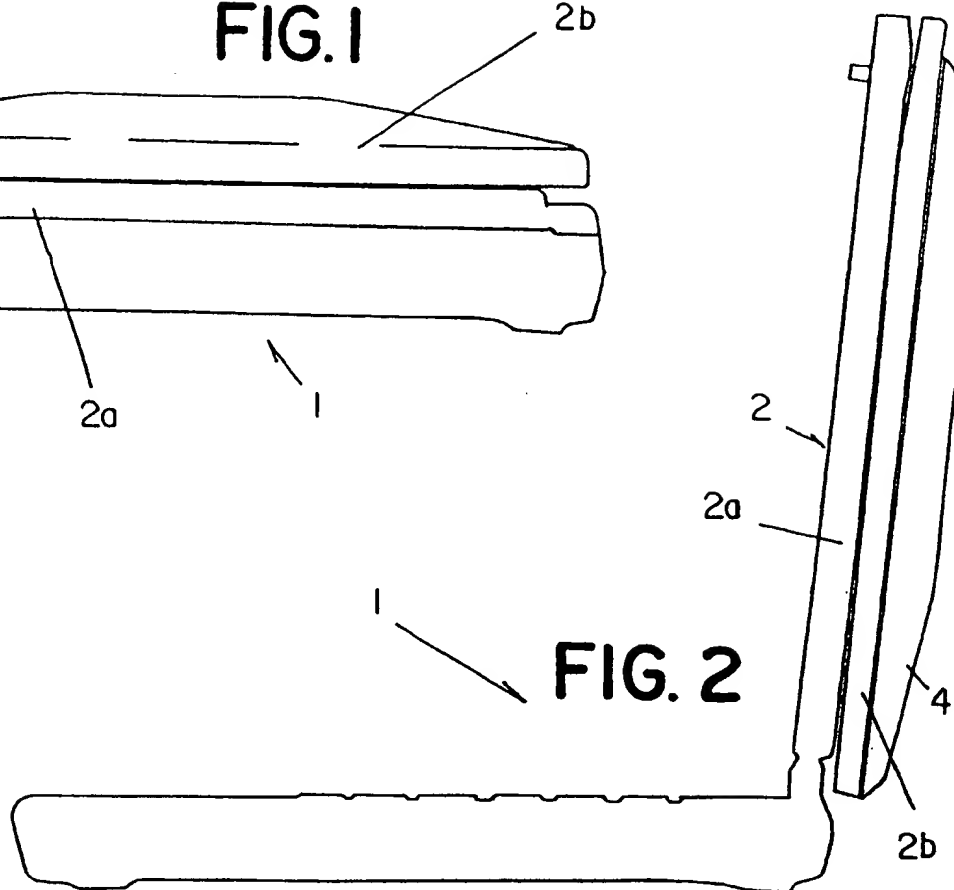
with one of the fingers of the hand and in this case the word pointed out on said second screen (2b) by the finger of whom is attending the presentation is instantaneously pointed out in the main screen (2a) in order that the  
5 presenter takes notice of the same.

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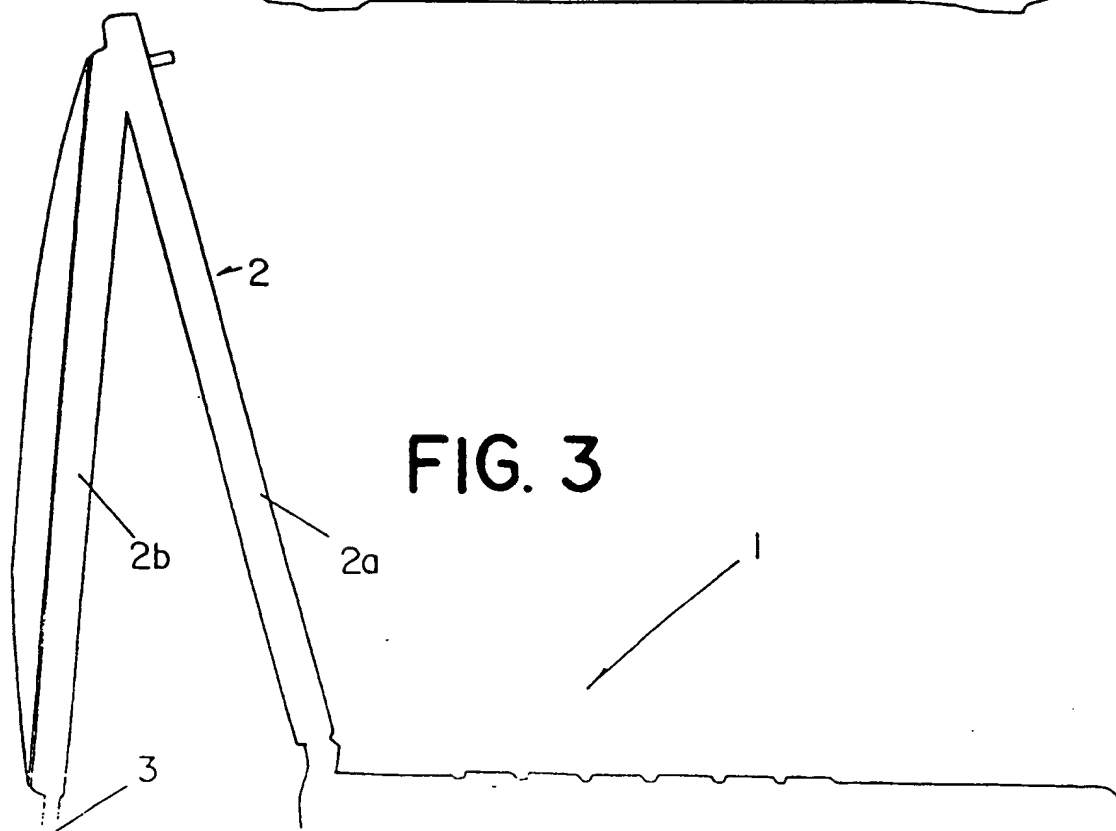
**FIG. 1**

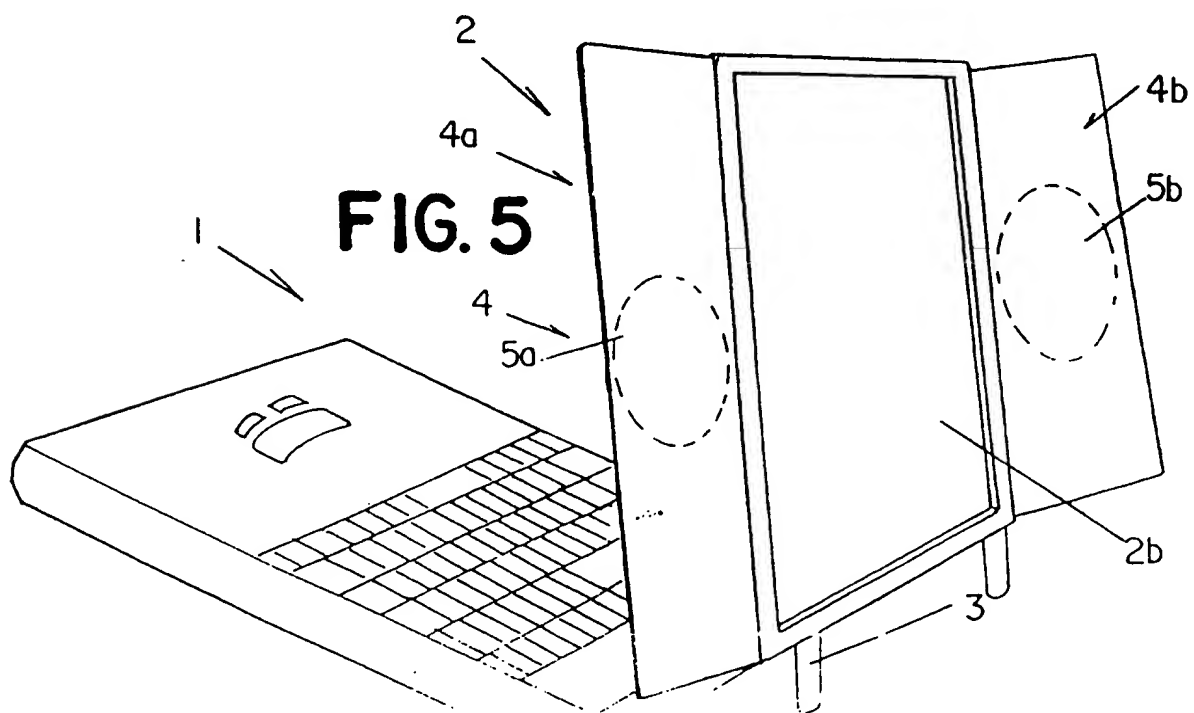
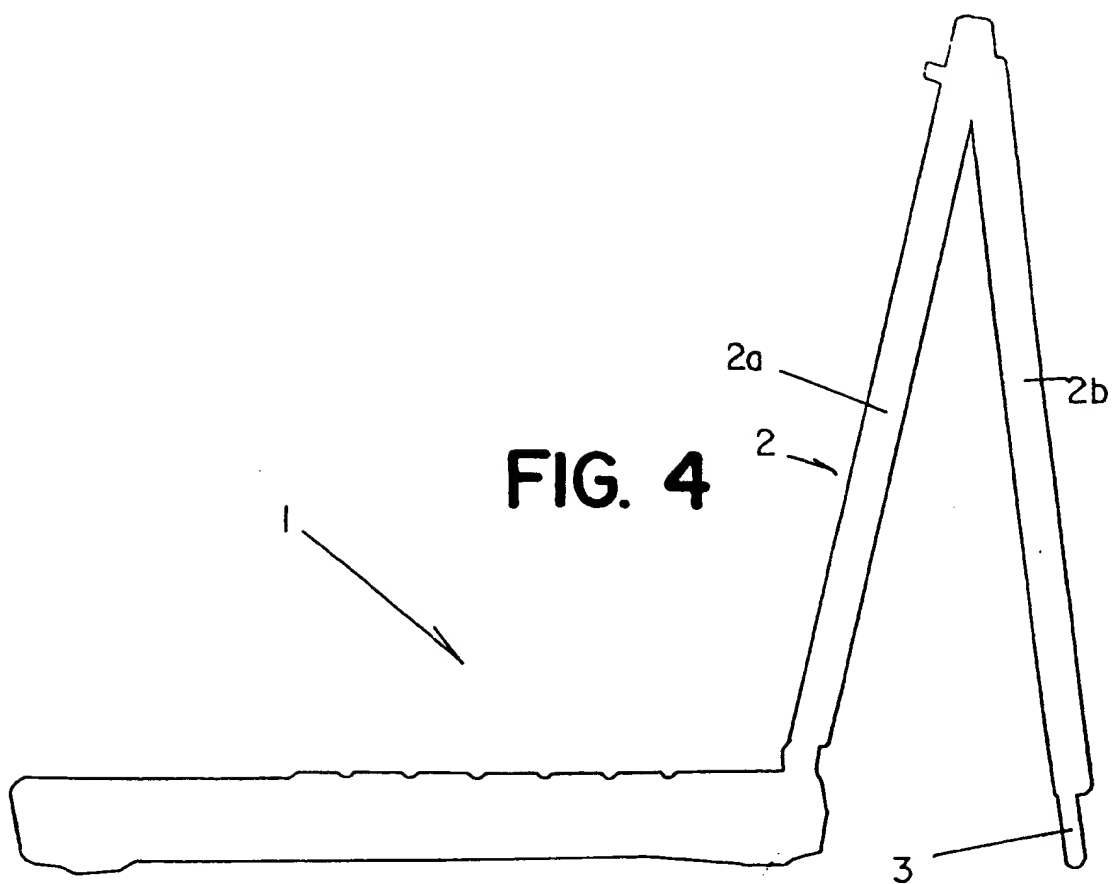


**FIG. 2**

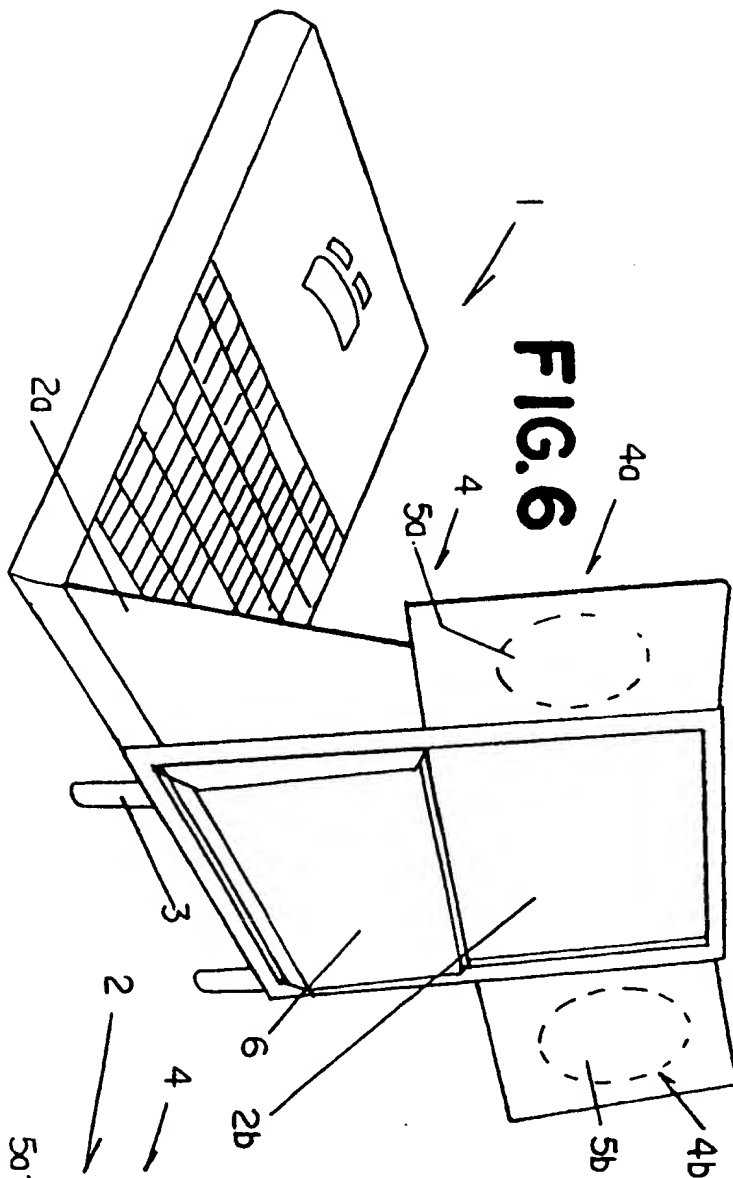


**FIG. 3**

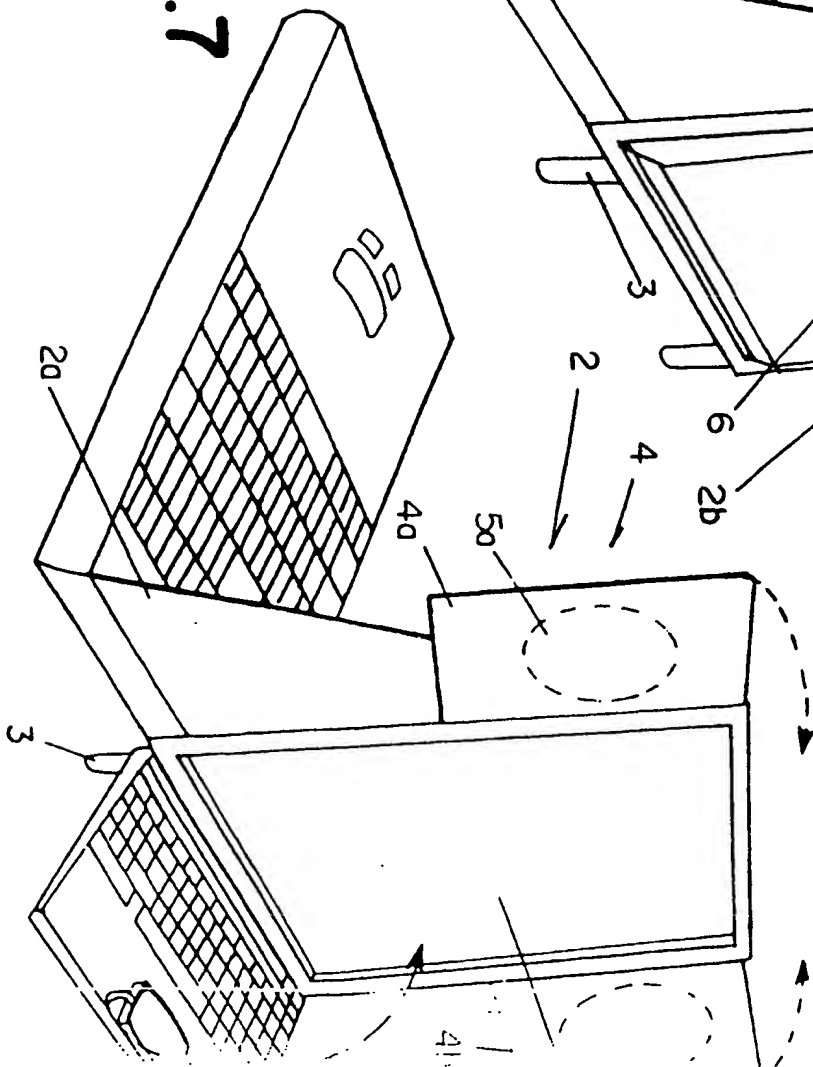




**FIG.6**



**FIG.7**



## INTERNATIONAL SEARCH REPORT

International application No.

PCT/BR98/00102

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) : G09G 3/36

US CL : 345/1-5, 168, 169

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 345/1-5, 168, 169

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,644,338 A (BOWEN) 01 July 1997, col. 7, line 55-col. 8, line 7, col. 8, lines 27-36, col. 8, line 61-col. 9, line 9.	1
Y	US 5,467,102 A (KUNO et al) 14 November 1995, col. 3 line 26-col. 4, line 19.	1

☐ Further documents are listed in the continuation of Box C.
 ☐ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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Date of the actual completion of the international search

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